OneCode Solution™

Intelligent Mail® Barcode Technical Resource Guide

Rev 2.7

Prepared by:
Intelligent Mail Planning and Standards
United States Postal Service

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Information conveyed in this document is preliminary.
The information in this document is intended to give mailers and service providers preliminary information on the use of Intelligent Mail® barcode for OneCode Confirm™ and OneCode ACS™ services.
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Information in this document is derived from official US Postal Service publications, including the Domestic Mail Manual.
Where there is conflict, the official publications have precedence over this document.

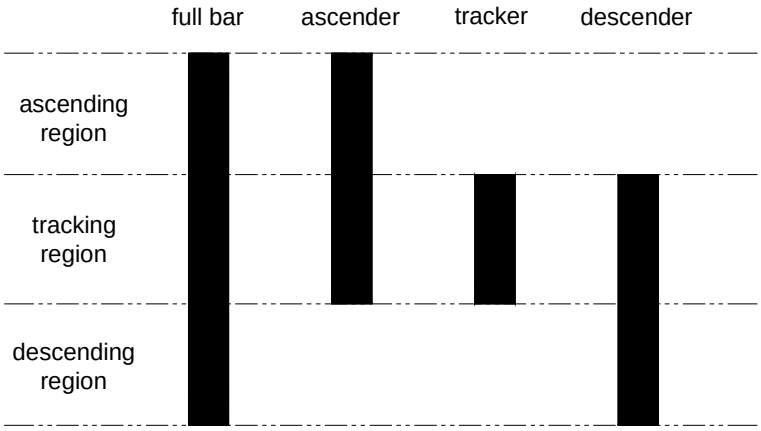
What is the Intelligent Mail® Barcode?

In 2003, the United States Postal Service (USPS) published the Intelligent Mail® Corporate Plan. This plan identified several key strategies including: Uniquely Identify Mail and Mail Aggregates; Develop and Deploy an Enabling Infrastructure; and Enhance Address Quality. This plan provided the following vision:

> "To capitalize on the value of information about mail, the Postal Service and its customers will place an information-rich code on all mail, aggregates of mail, and business forms, enabling end-to-end visibility into the mail stream."

In support of this OneCode Vision®, the Postal Service, in partnership with the mailing industry, developed the Intelligent Mail® barcode (formally known as the 4-state Customer Barcode). It is the next generation in the evolution of Postal Service barcode technology. It offers a more effective alternative to our existing barcodes by increasing the amount of information that is present on letter and flat mailpieces, allowing for expanded tracking capability, and creating greater visibility into the mailstream.

The Intelligent Mail barcode is a height-modulated barcode that encodes a 31-digit string of mailpiece data into 65 vertical bars. These bars may be present in one of four possible states: full bar, ascender, tracker, and descender.



The following table compares the dimensions of the Intelligent Mail barcode to those of the POSTNET™ and PLANET Code® barcodes.

Attribute	11-digit POSTNET	13-digit PLANET	Intelligent Mail Barcode
Number of bars	62	72	65
Bar Width	0.020 ± 0.005 inch	0.020 ± 0.005 inch	0.020 ± 0.005 inch
Horizontal Pitch	22 ± 2 bars per inch	22 ± 2 bars per inch	22 ± 2 bars per inch
Height of Full Bar	0.125 ± 0.010 inch	0.125 ± 0.010 inch	0.182 ± 0.048 inch

What Services Does the Intelligent Mail Barcode Support?

The Postal Service offers a suite of services for letters and flats using the Intelligent Mail barcode. This suite of services is called the OneCode Solution™ suite. Since the initial launch of the Intelligent Mail barcode on September 1, 2006, mailers have had the option of using the Intelligent Mail barcode on letter mail for the Confirm® Service, referred to as OneCode Confirm™, and a version of Address Change Service™ (ACS™), called OneCode ACS™, for First-Class Mail®. The Intelligent Mail barcode can be used for automation-rate eligibility with or without these services requested.

Effective May 1, 2007, the Postal Service expanded use of the Intelligent Mail barcode by allowing mailers to use it on automation-rate First-Class Mail, Periodicals, Standard Mail®, and Bound Printed Matter flat-size mailpieces for rate eligibility in lieu of POSTNET barcodes. The Postal Service allows First-Class Mail, Periodicals, and Standard Mail flats with Intelligent Mail barcodes to participate in OneCode Confirm. The Postal Service allows First-Class Mail, Bound Printed Matter, and Periodical letters and flats with Intelligent Mail barcodes to participate in OneCode ACS.

At the present time, use of the Intelligent Mail barcode is optional; however, many customers have found that, because it offers significant advantages over POSTNET and PLANET Code barcodes (including using less mailpiece “real estate” and offering more overall data capacity), it makes good business sense to use this new format.

Current plans are to require the Intelligent Mail barcode to qualify for automation discounts beginning in 2009. In the meantime, the Postal Service will continue to support the use of the POSTNET barcode for encoding the delivery point barcode, the PLANET Code barcode for encoding tracking information for

Confirm, and alphanumeric characters for conveying participant code and Keyline information for ACS.

What are the Fields in the Intelligent Mail Barcode?

The Intelligent Mail barcode carries a data payload of 31 digits comprised of the following elements.

Type	Field	Field Length (in digits)
Tracking Code	Barcode Identifier	2 (2nd digit must be 0–4)
	Service Type Identifier	3
	Mailer Identifier	6 or 9
	Serial Number	9 (when used with 6 digit Mailer ID) 6 (when used with 9 digit Mailer ID)
Routing Code	Delivery Point ZIP Code™	0, 5, 9, or 11
Total Data Payload		**31 (maximum)**

NOTE: The 20-digit Tracking Code construct may change depending on selected services in order to allow expanded tracking capabilities.

Barcode Identifier

The Barcode Identifier field is a 2-digit field that is reserved to encode the presort identification that is currently printed in human readable form on the optional endorsement line (OEL) as well as for future Postal Service use. Generally, this field should be left as "00" by OneCode Confirm™ and OneCode ACS™ users. The exception is for automation-rate eligible flat mail with an optional endorsement line, where the Intelligent Mail barcode must contain OEL coding corresponding to the correct sortation level of each piece. The following table provides the OEL codes for use within the Intelligent Mail barcode.

Barcode ID	Description	Example of Currently Applied OEL
10	Carrier Route (CR), Enhanced Carrier Route (ECR), and FIRM	********** FIRM 12345 ********** CAR-RT LOT**C-001 ********** CAR-RT WSH**C-001 ********** CAR-RT WSS**C-001 ********** CAR-RT SORT**C-001
20	5-Digit/Scheme	********** 5-DIGIT 12345 ********** SCH 5-DIGIT 12345
30	3-Digit/Scheme	********** 3-DIGIT 771 ********** SCH 3-DIGIT 006

40	Area Distribution Center (ADC)	********** ALL FOR ADC 105 ********** ALL FOR ADC 90197
50	Mixed Area Distribution Center (MADC), Origin Mixed ADC (OMX)	********** ORIGIN MIXED ADC 117 ********** MIXED ADC 640 ********** MIXED ADC 60821

Service Type Identifier

The Service Type Identifier field is a 3-digit field that indicates participation, or the lack of, in various Postal Service programs. Each 3-digit value will correspond to a particular mail class with a particular combination of service(s). Eventually the Postal Service anticipates supporting many combinations of class and service using this field; however, initially only a limited set of offerings will be available. The following table provides codes and corresponding service descriptions.

Service Type ID	Description
040	First-Class Mail with Destination Confirm
042	Standard Mail with Destination Confirm
044	Periodicals with Destination Confirm
050	Origin Confirm
080	First-Class Mail with Address Service Requested
082	First-Class Mail with Change Service Requested
782	Periodicals with Address Service Requested
784	Periodicals with Change Service Requested
422	Bound Printed Mail with Address Service Requested
431	Bound Printed Mail with Change Service Requested
140	First-Class Mail with Destination Confirm and Address Service Requested
240	First-Class Mail with Destination Confirm and Change Service Requested
144	Periodicals with Destination Confirm and Address Service Requested
244	Periodicals with Destination Confirm and Change Service Requested

Beyond simply identifying when a mailpiece carries special services, the Intelligent Mail barcode will identify the mail class – even when no additional service is requested. The following table identifies the Service Type Identifier that should be used. If a mailer cannot use one of the defined mail class designations, they should call the National Customer Service Center (NCSC) Help Desk at (877) 640-0724 to request an exception.

Service Type ID	Mail Class Description
700	First-Class Mail with no additional services
702	Standard Mail with no additional services
704	Periodicals with no additional services
706	Bound Printed Matter with no additional services

Mailer Identifier (MID) & Serial Number

Mailer Identifier (MID) and the Serial Number are numeric fields designed to encode service and customer-specific information. The following table shows the payload layout for the Intelligent Mail barcode for use with OneCode Confirm. The corresponding fields from a PLANET Code barcode are also shown.

Intelligent Mail Barcode		**PLANET Code Destination Confirm**		**PLANET Code Origin Confirm**	
Field Name	**Length**	**Field Name**	**Length**	**Field name**	**Length**
Barcode ID	2				
Service Type ID	3	Service Type ID	2	Service Type ID	2
Mailer Identifier	6 or 9	Subscriber ID	5	Customer ID	9 or 11
Serial Number	6 or 9 Depends on length of MID	Mailing ID	4 or 6		
Routing ZIP	0, 5, 9, 11				

It is important to note that the table above provides a general overview of the fields contained within the Intelligent Mail barcode. In certain instances (depending on the service requested) the Mailer Identifier and Serial Number fields may be combined and reallocated to meet the data needs of the respective program. Further program-specific instructions are provided below.

The Mailer Identifier field is a 6-digit or 9-digit number that identifies a specific agent in the mail preparation process who has some responsibility for the ownership, content, make up, or preparation of the mail. The *PostalOne!*® Help Desk is responsible for issuing Mailer IDs to any customer that does not plan to subscribe to OneCode Confirm or OneCode ACS. These Mailers, without a previously-assigned Mailer ID, should contact the *PostalOne!* Help Desk at (800) 522-9085 for assistance.

Mail owners and mail preparers will be granted 6-digit or 9-digit Mailer IDs based upon their mail volume and criteria identified by the PostalOne! System. A mail

owner or preparer who mails at least 40 million pieces per year will receive 6-digit Mailer IDs; all others will receive 9-digit Mailer IDs.

Current Destination Confirm subscribers should append a leading zero (0) to their previously-assigned 5-digit Subscriber ID to populate the MID field and contact the Help Desk for Confirm service to ensure their account is configured for the Intelligent Mail barcode. OneCode ACS subscribers will be assigned 6-digit Mailer IDs in place of their previously-assigned ACS 7-character participant code (which is used to uniquely identify the mailer for each particular mail class).

The Serial Number is a 6-digit or 9-digit field depending on the length of the Mailer ID. For Destination Confirm, this field will hold the existing Mailing ID field, which can be expanded to 9-digits if so desired. Otherwise, leading zeros should be used to fill the field completely. When using the Intelligent Mail barcode for Origin Confirm, subscribers may combine the Mailer Identifier field and the Serial Number field into a 15-digit field to hold the existing 9-digit or 11-digit Customer ID field plus additional digits. Subscribers can expand this field to 15-digits if so desired. Otherwise, leading zeros should be used to fill the field completely. OneCode ACS users should use the Serial Number field to encode information they previously encoded within the Keyline field.

Routing Code

The Routing ZIP Code™ field is designed to be used to encode the destination ZIP code of the mailpiece. Mailers may opt to encode a 5, 9 or 11-digit ZIP Code within this field. Unlike POSTNET barcode, the Routing ZIP Code within the Intelligent Mail barcode does not require a check digit. In certain situations the mailer may opt not to provide a Routing Code; however, mailers should adhere to the following program-specific guidance.

OneCode Confirm requires either a 9 or 11-digit Routing ZIP to serve as the "Subscriber ID" for Origin Confirm users. When used as a Subscriber ID, the Routing ZIP Code used must be registered within the subscriber's Confirm account.

When using OneCode Confirm for "seeding" within an automation discount mailing, a non-seeded mailpiece may use the Intelligent Mail barcode with a proper routing ZIP Code to meet the automation discount criteria. Such an Intelligent Mail barcode should use one of the Service Type IDs defined for use as a Mail Class Designator (those codes without services) to indicate that the piece is not intended to generate Confirm information. The Mailer Identifier field should contain the appropriate Subscriber ID.

Additional details pertaining to the use of the Intelligent Mail barcode as part of OneCode ACS is available in a new *OneCode ACS* document supplementing

Publication 8b- Address Change Service. Additional details about the use of the Intelligent Mail barcode as part of the OneCode Confirm program is available in *Publication 197 - Confirm® Service User Guide*. These documents can be downloaded from the Rapid Information Bulletin Board System (RIBBS) website at: http://ribbs.usps.gov/OneCodeSolution/

How is the Intelligent Mail Barcode printed?

Encoding data into a POSTNET or PLANET Code is very straightforward: each digit in the payload is represented by a predefined pattern of 5 bars. Encoding data into an Intelligent Mail barcode is more complex. The encoding algorithm that translates the 31 digits in the payload into 65 bars is defined in the USPS publication, *Specification USPS-B-3200*, which is available for download from the same RIBBS web site.

To facilitate the adoption of the Intelligent Mail barcode, the USPS has developed, and is making available at no charge, a web-based, interactive encoder-decoder tool, and an extensive library of encoding software and fonts suitable for encoding and printing the Intelligent Mail barcode in mail production environments using selected operating systems and printing architectures. These resources are available from the same RIBBS web site.

To download the library of encoding software and fonts from the RIBBS website, you must first request a user ID and password by calling the NCSC Help Desk at (877) 640-0724. You must log in using your assigned user ID and password before you can download from the library.

Once logged in, you will be able to download the encoding software package for any particular operating system of interest. Each package contains all the files needed to use the encoder software under that operating system in any of the languages or applications that are supported. The USPS currently provides software for a total of 20 combinations of operating systems, languages, and application environments:

	Language and Applications Supported					
Operating System	C	Java 2	COBOL	PL/1	MS Access	MS Excel
MVS, z/OS, and OS/390	Yes	Yes	Yes	Yes		
VSE/ESA	Yes		Yes	Yes		
OS/400	Yes	Yes	Yes			
AIX	Yes	Yes				
Linux for pSeries	Yes	Yes				
Linux for Intel[1]	Yes	Yes				
Programmer Version for Windows	Yes	Yes				
MS Office Version for Windows					Yes	Yes

For each operating system, the encoding software package is distributed as a standard ZIP file. Use any utility that can handle a PKZIP file to extract the individual files and store them in the path stored on the ZIP File. A user guide is included in each package to provide detailed operating system and language-specific instructions on how to install and use the files in the package. All the required binary loadable software modules and a number of source files for installation verification are also included in the package.

Independent of operating system and language, the encoding software works as follows. Each call to the encoder requires two arguments: a 20-digit tracking code, and a 0, 5, 9, and 11-digit routing code. The encoder will return the status of the encoding function along with a 65-character string of the letters F, A, D, or T, representing a full bar, ascender, descender, or tracker, respectively.

For example, a tracking code of 01234567094987654321 and a routing code of 01234567891 will be encoded into the following 65-character string:
AADTFFDFTDADTAADAATFDTDDAAADDTDTTDAFADADDDTFFFDDTTTADFAAADFTDAADA
When the string is printed with the appropriate font, the actual barcode will be produced:

From the same RIBBS website, registered and logged in users will be able to download the font package for any operating system of interest. Each package contains all the files needed to install and use the font for that operating system.

[1] Including Intel-compatible systems

The USPS currently provides fonts for five major production printing environments:

- The Advanced Function Printing (AFP) environment defined by IBM
- The XEROX Metacode, defined by XEROX
- Hewlett Packard's PCL (Print Control Language)
- Adobe's Postscript
- TrueType

Where can the Intelligent Mail Barcode be printed?

The placement configurations of the Intelligent Mail barcode on a letter-size and flat-size mail are defined in the *Domestic Mail Manual (DMM™)*. This section presents the following commonly used placement configurations. For additional details concerning barcode placement, please refer to 202.5, 302.4.2 and 503.13.3 of the *DMM*.

In describing code placement, the terms "above" and "below the address" are used here to mean the following, as defined in 202.5 of the *DMM*. The term "'above the address" here means either:

- Above the address line containing the recipient's name, or
- Above or below the Keyline information, or
- Above or below the optional endorsement line.

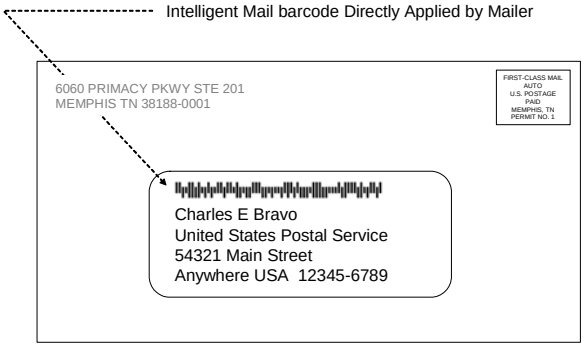
The term "below the address" means:

- Below the city, state, and ZIP Code line.

The mail piece images used to illustrate these configurations are not meant to be exact or exhaustive.

Configuration 1

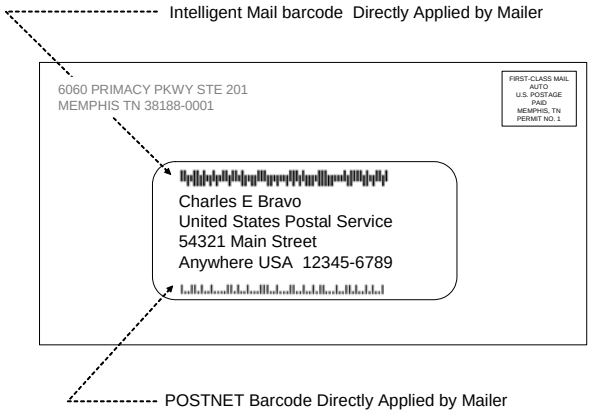
- Mailer applies the Intelligent Mail barcode above or below the address within the address block.
- Mailer encodes the delivery point code in the Intelligent Mail barcode along with the tracking code.



Configuration 1 (with Intelligent Mail barcode above address)

Configuration 2(a)

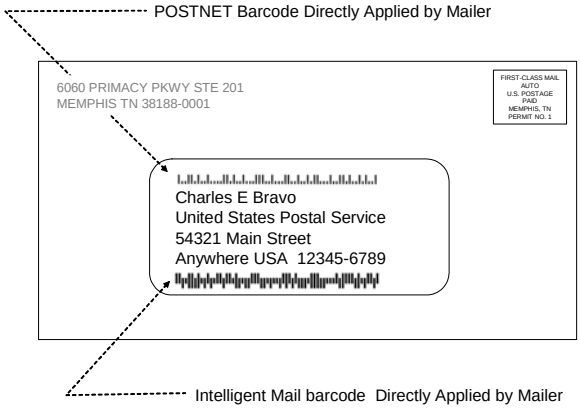
- Mailer applies the Intelligent Mail barcode above the address within the address block.
- Mailer encodes the delivery point code in a POSTNET barcode below the address in the address block.



Configuration 2(a)

Configuration 2(b)

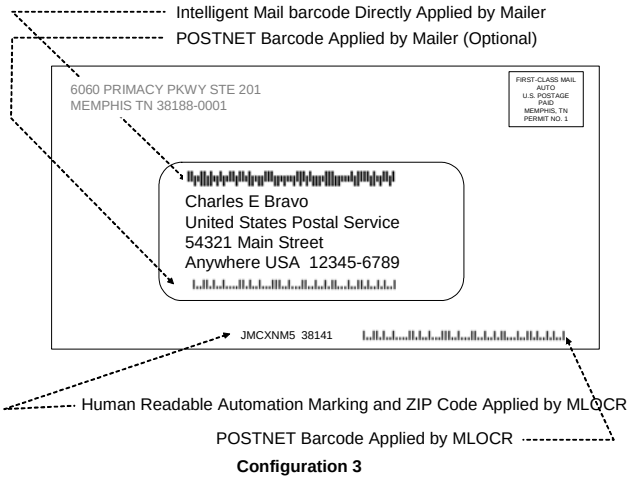
- Mailer applies the Intelligent Mail barcode below the address within the address block.
- Mailer encodes the delivery point code in a POSTNET barcode above the address in the address block.



Configuration 2(b)

Configuration 3

- Mailer applies the Intelligent Mail barcode with or without POSTNET barcode within the address block as in Configuration 1, 2(a), or 2(b).
- MLOCR applies POSTNET barcode in the barcode clear zone, along with the human readable automation marking[2] and ZIP Code to the left.

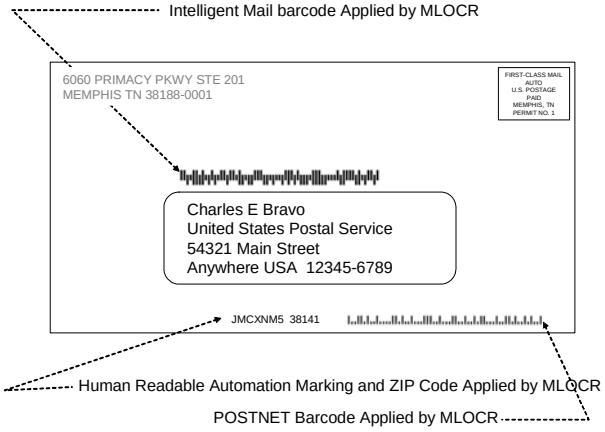


Configuration 3

[2] It is also known as automation rate marking. Requirement for automation marking is stated in 604.9.4.14(e) of the DMM. Specification for automation marking is in 705.5.3.2 of the DMM.

Configuration 4

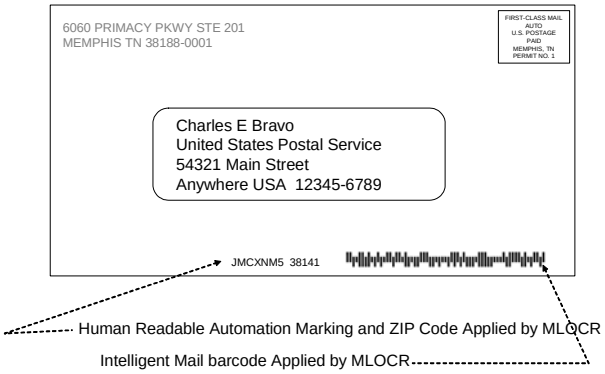
- Mailer does not apply POSTNET barcode or the Intelligent Mail barcode directly in the address block.
- MLOCR applies the POSTNET barcode in the barcode clear zone, along with the human readable automation marking and ZIP Code to the left.
- In addition, MLOCR applies the Intelligent Mail barcode containing the tracking code above the address block.



Configuration 4

Configuration 5

- Mailer does not apply POSTNET barcode or the Intelligent Mail barcode directly in the address block.
- MLOCR applies the Intelligent Mail barcode containing the routing code and tracking code in the barcode clear zone, along with the human readable automation marking and ZIP Code to the left.



Configuration 5

Any yellow forwarding label applied by the Computerized Forwarding System (CFS) and Postal Automated Redirection System (PARS) will not interfere with the Intelligent Mail barcode applied by the mailer or the MLOCR when the Intelligent Mail barcode is placed above the address. The tracking information in the Intelligent Mail barcode will continue to be available.

Any forwarding label applied may obscure the Intelligent Mail barcode if it is located below the address within the address block or in the barcode clear zone, and the tracking information may no longer be available. To preserve the tracking information, it would be necessary to add a new capability to combine the new routing code with the tracking code in the original Intelligent Mail barcode into a new Intelligent Mail barcode that is then printed on the forwarding label. Changes

to enable PARS to print a new Intelligent Mail barcode on the forwarding label are being evaluated. **Therefore, placing the Intelligent Mail barcode below the address within the address block or in the barcode clear zone cannot be supported by OneCode ACS on letter size mail. OneCode ACS users must apply the Intelligent Mail barcode above the address on letter-size mail only until PARS changes are implemented. This restriction does not apply to flat-size mail.**

In some of the above code placement configurations, the mail piece may end up with more than one routing code in either the POSTNET barcode or the Intelligent Mail barcode. Mail processing equipment uses the following precedence rules to select the routing code to use for sorting:

> If a valid routing code is present in the barcode at the lower right barcode clear zone, it has the highest precedence for routing regardless of whether it is an Intelligent Mail barcode or a POSTNET barcode.
>
> Otherwise, if there is more than one POSTNET barcode and/or Intelligent Mail barcode elsewhere on the mailpiece, precedence, from the highest to the lowest, is as follows:
>
> - POSTNET barcode with delivery point code
> - POSTNET barcode with ZIP+4 code
> - POSTNET barcode with 5-digit ZIP code
> - Any Intelligent Mail barcode

How reliable is the Intelligent Mail Barcode?

The Intelligent Mail barcode decoding software has undergone rigorous testing on various pieces of mail processing equipment in both controlled and live production environments. Virtually all Delivery Bar Code Sorters (DBCS), Carrier Sequence Bar Code Sorters (CSBCS), and Automated Flats Sorting Machines (AFSM) have been upgraded and successfully tested.

Several mailers helped expand the test scenarios to include live mail testing at diverse mail processing locations. Additionally, the Postal Service's National Customer Service Center that applies the Intelligent Mail barcode for Confirm service on Move Validation Letters (MVL) participated in these tests. Scan records captured by the mail processing equipment were carefully analyzed to ensure that the equipment performed as expected.

Want More Information?

For general information, or to download specifications, addenda to publications for various services, and the library of encoding software and fonts, please visit the RIBBS web site at: http://ribbs.usps.gov/OneCodeSolution/.

If you want to obtain user ID and password to download the library of encoding software and font, or if you need technical assistance in using the online tool or the library of encoding software and font, please contact the NCSC Help Desk at (877) 640-0724.

The Help Desk for Confirm service can be reached at (800) 238-3150.

The Help Desk for ACS can be reached at (800) 331-5746.

The Help Desk for *PostalOne!* can be reached at (800) 522-9085.